Genus *Freyeria* Courvoisier, 1920
Grass Jewel Blues

Courvoisier, 1920. *Deutsche Entomologische Zeitschrift, Iris* **34**: 234 (230-262). Type-species: *Lycaena trochylus* Freyer, by monotypy. *See*, also, Hesselbarth *et al*., 1995 (*Selbstverlag Sigbert Wagener, Hemdener Weg 19, D 46399 Bocholt, Germany*: 1-754.), and Balint & Johnson, 1997 (*Neue Entomologische Nachrichten* **40**: 8 (1-67)).

The genus *Freyeria* belongs to the Family Lycaenidae Leach, 1815; Subfamily Polyommatinae Swainson, 1827; Tribe Polyommatini Swainson, 1827; Subtribe Polyommatina Swainson, 1827. The other genera in the Subtribe Polyommatina in the Afrotropical Region are *Chilades* Moore, [1881] and *Luthrodes* Druce, 1895.

Freyeria (**Grass Jewel Blues**) is an Afrotropical, Palaearctic and Oriental genus containing three species. *F. trochylus* is Afrotropical but extends into the Palaearctic, *F. minuscula* is Madagascan and *F. putli* occurs in the Oriental and Australasian regions.

Talavera *et al*., 2013 state the following in regard to the genus: "*Freyeria* Courvoisier, 1920 (TS: *Lycaena trochylus* Freyer, 1845) is frequently treated by modern authors as a subgenus of *Chilades* (Bàlint and Johnson, 1997; Tolman and Lewington, 1997). Valvae in the male genitalia of *Freyeria* are elongated and have a short dorsal process (Zhdanko, 2004), and are generally similar to those of *Chilades*. However, molecular data demonstrate that *Freyeria* is not closely related to *Chilades* and represents a distinct clade that cannot possibly be subsumed within *Chilades* as it would result in a paraphyletic assemblage. Our analysis includes one specimen of *Freyeria* from Turkey (*F. trochylus*) and one from Australia (*F. putli* (Kollar, [1844])). The taxon *F. putli* has until recently been considered a subspecies of *F. trochylus* (Common and Waterhouse, 1981; Parsons, 1999), but now most authors treat it as a good species (Bàlint and Johnson, 1997; Braby, 2000). In our analysis, *F. trochylus* and *F. putli* appear as sister taxa, and we estimate that they diverged ca. 3.6 Ma. This is a surprisingly old divergence, and supports the recognition of *F. putli* as a distinct species."

**Freyeria trochylus* (Freyer, [1844])#
Brown Grass Jewel

Grass Jewel Blue (*Freyeria trochylus*). Left – male upperside. Right – male underside.
Images courtesy Herbert Otto (left) and Steve Woodhall (right).

Lycaena trochylus Freyer, [1844]. *Neuere Beiträge zur Schmetterlingstunde mit Abbildungen nach der Natur* **5** (71): 98? (63-

74).
Lycaena trochilus Friv. Trimen, 1866a. [misspelling of species name]
Lycaena trochilus Freyer, 1844. Trimen & Bowker, 1887b. [misspelling of species name]
Freyeria trochylus (Freyer, 1844). Couvoisier, 1920.
Freyeria trochilus Freyer. Swanepoel, 1953a. [misspelling of species name]
Freyeria trochylus (Freyer, 1844). Dickson & Kroon, 1978.
Freyeria trochylus (Freyer, 1844). Pringle *et al*., 1994: 278.
Freyeria trochylus (Freyer, [1844]). Ackery *et al*., 1995: 672.
Chilades trochylus (Freyer, [1844]). Lees *et al*., 2003, **comb. nov.** (see also Hesselbarth *et al*., 1995: 586).
Chilades trochylus Freyer, 1843. d'Abrera, 2009: 844. [date of authorship erroneous; should be 1844].
Freyeria trochylus (Freyer, 1844). Talavera *et al*., 2013: 188.
Freyeria trochylus (Freyer, [1844]). Williams, 2020. **comb. rev.**

Freyeria trochylus. Male (Wingspan 17 mm). Left – upperside; right – underside.
Rustenburg, North West Province, South Africa. 7 November 1973. M. Williams.
Images M.C.Williams ex Williams Collection.

Freyeria trochylus. Female (Wingspan 18 mm). Left – upperside; right – underside.
Musina, Limpopo Province, South Africa. 1 March 2009. M. Williams.
Images M.C.Williams ex Williams Collection.

Type locality: [Turkey]: "europäischen Türkey".
Distribution: Senegal, Gambia, Burkina Faso, Ivory Coast, Ghana, Benin (throughout), Nigeria, Gabon, Central African Republic, Democratic Republic of Congo, Uganda, Kenya, Tanzania, Malawi, Zambia, Angola, Mozambique, Zimbabwe, Botswana, Namibia, South Africa (Limpopo Province, Mpumalanga, North West Province, Gauteng, Free State Province, KwaZulu-Natal, Eastern Cape Province, Western Cape Province, Northern Cape Province), Swaziland, Lesotho, Arabia, Yemen (including Socotra). Also in Madagascar (Stempffer (1954) and Larsen (1996: 252) but not noted by Ackery *et al*. (1995: 672).

Extralimital in south-eastern Europe, Greece, Bulgaria (Ignatov *et al*., 2013.), Near East, India (north-west), Australia (north-west).
Specific localities:
Gambia – Kotu, Tintinto, Gunjur, Lamin Koto, Kuntaur, Basse (Jon Baker, pers, comm. May 2020).
Ghana – Shai Hills on the Accra Plains (Larsen, 2005a).
Benin – Houeyogbe Forest (Coache & Rainon, 2016); see Coache *et al*. (2017).
Gabon – Nyonie (Vande weghe, 2010); Lope N.P. (Vande weghe, 2010); camp PPG (Vande weghe, 2010); Ekouyi (Vande weghe, 2010).
Central African Republic – Dzanga (Noss, 1998).
Democratic Republic of Congo – Ituri Forest (Ducarme, 2018); Semuliki Valley (Ducarme, 2018).
Kenya – Widespread (Larsen, 1991c).
Tanzania – In most parts of the country (Kielland, 1990d).

Malawi – Mt Mulanje (Congdon *et al*., 2010); Mt Zomba (Congdon *et al*., 2010).
Zambia – Widespread (Heath *et al*., 2002); Ikelenge (Heath *et al*., 2002); Lusaka (Heath *et al*., 2002); Mufulira (Heath *et al*., 2002).
Angola – Iona N.P., Namibe [16 47 24S 12 21 29E] (Willis, 2009).
Mozambique – Mt Inago (Congdon *et al*., 2010); Mt Namuli (Congdon *et al*., 2010); Mt Mecula [-12.0772 37.6297] (Congdon & Bayliss, 2013); Mt Yao [-12.4432 36.5114] (Congdon & Bayliss, 2013).
Botswana – Throughout (Larsen, 1991l); Kang (Larsen, 1991l).
Limpopo Province – Throughout (Swanepoel, 1953); Doorndraai Dam Nature Reserve (Warren, 1990); Percy Fyfe Nature Reserve (Warren, 1990); Lekgalameetse Nature Reserve ("Malta Forest"); Highlands Wilderness (Bode & Bode, unpublished checklist); Soetdoring Farm [-24.561 28.233] (A. Mayer, pers comm. 2015); Bateleur Nature Reserve (Williams & Dobson, unpub., 2015).
Mpumalanga – Throughout (Swanepoel, 1953); Sterkspruit Nature Reserve (Williams); Buffelskloof Nature Reserve (Williams).
North West Province – Throughout (Swanepoel, 1953); Kgaswane Mountain Reserve (Williams); Mountain Sanctuary Nature Reserve (Williams); Utopia Resort (C. Dobson, 2006); Borakalalo Nature Reserve (J. Dobson, unpublished, 2009).
Gauteng – Throughout (Swanepoel, 1953); Pretoria (male illustrated above); Hornsnek (Female illustrated above); Buffelsdrif Conservancy (Williams).
Free State Province – Bloemfontein (Swanepoel, 1953); Viljoenskroon (Swanepoel, 1953).
KwaZulu-Natal – Throughout (Swanepoel, 1953); Durban (Clark & Dickson, 1971); Tembe Nature Reserve (Pringle & Kyle, 2002).
Eastern Cape Province – Port Elizabeth (Swanepoel, 1953); Burgersdorp (Swanepoel, 1953); Bashee River (Swanepoel, 1953).
Western Cape Province – Robertson (Swanepoel, 1953); Swellendam (Claassens).
Northern Cape Province – Diamond Fields (Murray, 1874).
Swaziland – Throughout (Swanepoel, 1953); Mlawula Nature Reserve (www.sntc.org.sz); Malolotja Nature Reserve (www.sntc.org.sz).
Lesotho – Maseru (Swanepoel, 1953).
Habitat: Grassland and grassy areas in savanna. May be found along roads in forest (Larsen, 1991c). In Tanzania at altitudes from sea-level to more than 2 000 m (Kielland, 1990d).
Habits: Commoner in East and southern Africa than in West Africa (Larsen, 2005a). Flies low down, quite rapidly, usually in the vicinity of the larval foodplants. It likes to settle on bare ground, often on unpaved roads (Kielland, 1990d). Nectar from the flowers of the larval foodplants serves as an important source of food for the adults (Larsen, 2005a). Both sexes feed from flowers and males mud-puddle or sometimes come to cow pats. Very occasionally they may be found feeding high up in flowering acacias (Larsen, 1991c). Males defend small territories from perches on low-growing vegetation (Pringle *et al*., 1994). Hindwing rubbing appears to be more consistently shown by this species than by other polyommatines (Larsen, 2005a).
Flight period: All year in warmer localities; summer in cooler areas (Pringle *et al*., 1994).
Early stages:

Clark & Dickson, 1971: 81 [as *Freyeria trochilus*; Durban, KwaZulu-Natal].

"**Egg**. 0.45 mm diam. x 0.3 mm high. Laid singly on young shoots. Pale dull green with a network of white ribbing arranged in two sets, 20 in each, the ribs radiating in involute curves from the micropyle. The intersections near the edge and down the sides are punctuated by small moles. Eggs hatch after 7 days. The discarded shell is not eaten. **Larva**. 1st instar 0.75 mm, growing to 1.5 mm in 10-12 days; 2nd instar growing to 2.75 mm in 7 days; 3rd instar growing to 4 mm in 7 days; 4th instar growing to 8 mm in 8-11 days. The honey-gland is present in the 2nd to 4th instars and the tubercles in the 3rd to 4th instars. The final-instar tubercles have 21 spines each. Larvae live on the leaves, buds and flowers, moulting concealed among young shoots. There is a succession of broods during the warm months. The colour varies considerably, from green with dark green markings, some with a pink dorsal and subspiracular line replacing the dark green, to very pale pink or whitish pink with red markings. There is a white lateral ridge line. The female is usually slightly larger than the male. The species is associated with ants, like the other small butterflies resembling it, one of the ants recorded being a species of *Pheidole*. **Pupa**. 6-7 mm. Secured to stalks or rubbish by the cremastral hooks and a girdle. Emergence takes place after 15 days."

Tolman, 1995 [Greece].



Egg, final instar larva and pupa of *Freyeria trochylus*. Images courtesy Allison Sharp.

Larval food:
Heliotropium species (Boraginaceae) [Clark & Dickson, 1971: 81].
Indigofera astragalina DC. (Fabaceae) [Otto *et al*., 2013: 72].
Indigofera cryptantha Benth. ex Harv. (Fabaceae) [Murray, cited by Clark & Dickson, 1971: 81].
Indigofera eriocarpa E.Mey. (Fabaceae) [Kroon, 1999].
Indigofera setiflora Baker (Fabaceae) [Staude *in* CRG database, 2016; Magaliesburg, Gauteng].
Indigofera species (Fabaceae) [Larsen, 2005a; Shai Hills on the Accra Plains in Ghana].
Indogofera swaziensis Bolus (Fabaceae) [Otto *et al*., 2013: 72].
Indogofera vicioides Jaub & Spach. var. *rogersii* (R.E. Fr.) J.B. Gillett (Fabaceae) [Otto *et al*., 2013: 72].
Tephrosia purpurea (L.) Pers. (Fabaceae) [Otto *et al*., 2013: 72].
Associated ants:
Pheidole species (Formicidae) [Clark & Dickson, 1971].
Relevant literature:
Talavera et al., 2013 [Taxonomy].
De Freina, 2014 [Comparisons with sibling species *F. putli*].
Tiple *et al*., 2009 [Genetic relationships with closely-related species].
Balint & Olivier, 2001.

parva Murray, 1874 (as sp. of *Lycaena*). *Transactions of the Entomological Society of London* **1874**: 526 (523-529). [South Africa]: "Diamond Fields".

grisea Aiger-Abafi, 1906 (as ssp. of *Chilades trochylus*). Synonymized with *Chilades trochylus* by Balint & Olivier, 2001 (*Annales Historico Naturales Musei Nationalis Hungarici* **93**: 164 (151-198)).

**Freyeria minuscula* (Aurivillius, 1909)
Malagasy Grass Jewel

Cupido minuscula Aurivillius, 1909. *In*: Voeltzkow, A., *Reise in Ostafrika in den Jahren 1903-1905* **2**: 325 (309-348). Stuttgart.
Freyeria minuscula (Aurivillius, 1909). Ackery *et al*., 1995: 672.
Chilades minuscula (Aurivillius, 1909). **comb. nov.** Lees *et al*., 2003 (see also Hesselbarth *et al*., 1995: 586).
Chilades miniscula Aurivillius, 1909. d'Abrera, 2009: 844 [misspelling of species name; should be *minuscula*].
Freyeria minuscule (Aurivillius, 1909). Talavera et al., 2013: 188. [misspelling of species name].
Freyeria minuscula (Aurivillius, 1909). Williams, 2020. **comb. rev.**


Freyeria minuscula. Male. Left – upperside; right – underside.
Ambalamanakana, Madagascar. 9 April 2017. A. Gardiner.
Images M.C.Williams ex Gardiner Collection.

Freyeria minuscula. Female. Left – upperside; right – underside.
Alakamisy, Madagascar. 14 April 2017. A. Gardiner.
Images M.C.Williams ex Gardiner Collection.

Type locality: Madagascar: "Andranohinaly [Andranohinalahy], Westküste (SW. Madagaskar)". Holotype in the Swedish Natural History Museum (images available at www2.nrm.se/en/lep_nrm/m).
Distribution: Madagascar (widespread).
Specific localities:
Madagascar – Andranohinalahy (TL).
Habitat: Transformed grassland (Lees *et al*., 2003).
Early stages: Nothing published.
Larval food: Nothing published.